Questions from Senator Stamas:

1. It's a city-wide problem. Can you walk through a list of the different risk factors that go into what's coming out of a tap?

Many different risk factors can be associated with the quality of water at customer's taps. While each of the drinking water treatment processes are monitored on several occasions throughout each day along with the water leaving the treatment facility, the water quality can change as it "travels" throughout the city. The distribution system, or the water infrastructure, plays a significant role in maintaining water quality characteristics that are observed when water first leaves the treatment plant.

Some of the risk factors include: 1. Condition and size of distribution piping. 2. Condition and operation of system valves, 3. Residence time in the system (how long it takes to reach the consumer taps), 4. Location of consumers tap as it relates to the distribution system, 5. Condition of piping in consumers home or business. 6. The amount of water usage at the residence or business. 7. Construction (roads, water, sewer, etc.), water system maintenance, and water system repairs.

2. More than 20 years ago, as stricter federal guidelines were put in place, water systems were required to develop inventories of the materials in distribution systems so that they could identify samples sites for lead and copper testing. You have indicated that Flint never did, leaving it with a hodgepodge of scattered information. Published reports indicate that sometimes the paper slips and map data had water service line information, but often it did not. What impact has poor record keeping played in managing the city's water system. What changes would you suggest going forward?

Record keeping plays a significant role in the management of the city water system. Without dependable, easily accessible records, investigating issues and planning projects takes a significant amount of work. The information necessary to make good decisions is dependent on the availability and accuracy of records. In the past few years the City has made efforts to update and correct data as work is done in the system, but moving forward, I would like to see the records digitized, eventually verified, and then incorporated into an asset management system database that encompasses all information of equipment contained in the water distribution system.

3. Is following these rules regarding drinking water testing the responsibility of the State or is it the responsibility of the local officials and staff who run the water treatment plant?

In general, both the State and the City have a role in following the rules for drinking water testing. The State supplies Treatment Plants and distribution systems with a monitoring schedule. The monitoring schedule dictates what parameters are tested, where the samples should be collected, and the frequency of the testing.

In regards to Lead and copper testing, I believe both the City and the State have a responsibility. It is the responsibility of the City to have the information of the lead lines present to correctly monitor according to the rules. A State Drinking Water lab was utilized to test the samples, and this lab provided the sampling instructions and sample bottles which the City distributed to residents.

4. Let's go back to the time when the when the discussion first started about switching away from Detroit water, how did you first become aware of that conversation and how did you respond to it?

Not long after I first began working at the Water Treatment Plant in November of 2005 I heard rumors of leaving Detroit either by utilizing the Flint River or by joining other communities in the construction of a raw water pipeline to Lake Huron. My initial response was positive, I viewed the treatment plant as a City asset that should be put to good use. A few years later, the talk of a raw water pipeline increased, and eventually the City officially joined the KWA. I believe it was early in 2013 when I first heard the idea of using the Flint River on an interim basis until the KWA pipeline was complete.

5. At what time did you first become aware that the city would need to do more corrosion treatments because of the chemistry of the Flint River water?

I assumed that corrosion control would be required initially with the switch to the Flint River. In late February of 2015, based on the results I seen with Lead & Copper monitoring, I knew the City would be required to add corrosion control chemicals before too long. In August of 2015, the State DEQ sent a letter requiring the addition of corrosion control chemicals with a deadline of December 31st 2015.

6. Who did you advise of this?

Initially, weeks prior to the switch to the Flint River, I asked State Regulators about the frequency of phosphate monitoring in the system.

7. What did you hear back? From whom?

It was said that phosphate addition would not be required, and therefore would not need to be monitored. The City would be required to complete two 6 month rounds of sampling for Lead & Copper and results will indicate the need, if any, for corrosion control. This was stated by one of the MDEQ district engineers overseeing Flint.

8. Looking back, is there anything you would have done differently in this situation?

Looking back, I would do a couple of things differently. I would take the time to question the Regulatory agencies more in depth on some of the requirements, or lack thereof. I would also have voiced my opinions to City leaders with more emotion.

From Representative Irwin

1) In an email to several DEQ employees on April 17, 2014, you indicated you were feeling pressure from above to put the Flint Water Treatment Plant into full-time operation, despite your serious misgivings about the plant's readiness. Who specifically was exerting pressure? How was this pressure manifested?

   The need to meet the treatment plant operational deadline of April 30th 2014 was put forward by the previous Utilities Administrator and Director of Public Works. Daugherty Johnson, and Howard Croft respectively. The way this was expressed to me was that meeting this April 30th deadline was not an option, it had to be done.

2) At the time the Flint Water Treatment Plant went into full-time operation, was its staffing level similar in numbers and experience to other similarly-sized systems processing raw river water (e.g. Ann Arbor)? Do you believe that staffing shortfalls contributed to the problems with corrosion control, disinfection byproducts, or bacteria levels? Have any staffing shortfalls been corrected, or is there still a need for more experienced staff?

   At the time the Treatment Plant went into service, the staffing was somewhat comparable to other similar sized systems. I had originally asked to have 4 additional employees but was told that finances dictated how many employees the Treatment Plant could afford. I do not believe staffing shortfalls directly contributed to problems with corrosion control, disinfection byproducts, or bacteria levels. In my opinion, these issues were a combination

of the upset to the water system by introducing a water with different characteristics, and the conditions of the system.

Staffing shortfalls are still being corrected, and there is still a need to hire more staff at the treatment plant and for the operation and maintenance of the distribution system. Experienced staff is always preferred, but the City does have capable staff with significant experience. The real need is provide the current qualified staff with resources and to allow them to manage the system proactively, as all water systems should be.

3) You and Brent Wright received an email from Adam Rosenthal of DEQ on June 25, 2015, saying that Flint needed to submit 61 more water samples and that "they are will be [error in original text] below the AL for lead. As of now with 39 results, Flint's 90th percentile is over the AL for lead." When you received that email, how did you interpret it? Did anything about Flint's method of selecting and obtaining water samples change after you received it? Did the news that the 39 samples collected so far had a high 90th percentile lead level prompt any action or discussion at Flint WTP?

I interpreted the email as the City is going to be in violation for not collecting the required number of samples and in violation of the action level (AL) for lead.

After receiving the email, the City's procedure for collecting samples did not necessarily change. The City was having trouble with residents participating in the lead and copper sampling. At the time The City believed that 100 samples were necessary to meet monitoring requirements, and roughly 200 sample bottles and instructions had already been distributed to residents, churches, and community groups throughout the City. As the monitoring deadline approached the City made every effort to collect more samples, including going door to door to solicit volunteers.

The news that the 39 samples collected so far exceeded the AL for level did not prompt discussions, the discussions were already ongoing with a number of the water department staff. Results of a specific home lead testing in February of 2015, really pointed to the issues The City was going to face in the near future.